

BOAT CHART - A large scale working chart on which hydrographic data (soundings, bottom characteristics, etc.) are plotted by survey parties.

BRAIDED STREAM - A watercourse not filled by the normal stream flow, which subdivides into an interlaced pattern of channels.

BRANCH OF THE SEA - Same as arm of the sea.

BRIDGE - A structure over a traffic carrying way or water course having a span of more than 10 feet.

BRIDGING - The extension and adjustment of photogrammetric surveys between bands of ground control. See STEREOTRIANGULATION.

BUILDING GRAVER - An instrument for scribing solid rectangular map features.

BULKHEAD LINE - A line in a harbor or navigable waters defining the channelward limit of solid fills or bulkheads. Such lines are usually established by the Secretary of the Defense Department; however, state or municipal authorities under their police powers may establish bulkhead lines shoreward of those established by the Secretary of Defense.

BULL'S EYE LEVEL - See CIRCULAR LEVEL

BUNDLE SOLUTION - A computation method in analytical aerotriangulation where all the parameters are considered in a large simultaneous solution.

BUTTE - A flat-topped hill, produced when hard strata of rock overlie weaker layers, and protect them from being worn down. The butte is similar to but smaller than a *Mesa*, and is often produced from a mesa when the latter is reduced in size.

C

CRT - Cathode ray tube.

CALIBRATED FOCAL LENGTH (CFL) - An adjusted value of the equivalent focal length so computed as to distribute the effect of lens distortion in a desired manner over the entire field used in a camera.

CALIBRATION - The act or process of determining certain specific measurements in a camera or other instrument or device for comparison with a standard or for purpose of record.

CALIBRATION, CAMERA - The determination of 1) the calibrated focal length; 2) the location of the principal point with respect to the fiducial marks; 3) the point of symmetry; 4) the resolution of the lens; 5) the degree of the flatness of the focal plane; and 6) the effective lens distortion in the focal plane of the camera which is referred to the particular calibrated focal length. In a multiple-lens camera, the calibration also includes the determination of the angles between the component perspective units.

CALIBRATION CONSTANTS - The results obtained by calibration which give the relationship of the principal point to the fiducial marks of a camera and the calibrated focal length of the lens-camera unit.

CAMERA, AERIAL - A camera specifically designed for use in aircraft. The prefix *aerial* is not essential where the context clearly indicates an aerial camera rather than a ground camera.

CAMERA AXIS - A line perpendicular to the focal plane of the camera and passing through the interior perspective center or emergent nodal point of the lens system.

CAMERA STATION - The point in space occupied by the camera lens at exposure.

CANAL - 1) An artificial watercourse cut through a land area for navigation, irrigation. 2) A long narrow arm of the sea extending far inland.

CANTILEVER EXTENSION - (USGS) Phototriangulation from a controlled area to an area of no control. The procedure may be progressive, starting from the control, or it may be a simultaneous mathematical procedure.

CANYON or CAÑON - A gorge, relatively narrow but of considerable size, bounded by steep slopes. It has been formed by a river cutting through the soft rocks of an arid region.

CAPE - 1) A point of land extending into the sea or a lake; a headland. 2) A relatively extensive land area jutting seaward from a continent or large island which prominently marks a change in, or interrupts notably, the coastal trend.

CARRYING CONTOUR - (USGS) A single contour line representing two or more contours; used to show vertical or near vertical topographic features, such as cliffs, cuts and fills.

CARTOGRAPHIC LICENSE - (USGS) The freedom to modify manuscript information in order to improve the clarity of the map.

CARTOGRAPHY - The art, science and technology of expressing graphically, by maps, charts, three-dimensional models and globes, the known physical features of the earth or any heavenly body, at any scale. In particular, cartography is concerned with all phases of map finishing, including the designing of format and symbolization; drafting, editing, and proofing of map content; and specifying requirements for reproduction.

CASED ROAD - A double line symbol for a road on a map-usually major highways.

CATHODE-RAY TUBE - A vacuum tube that generates a focused beam of electrons which can be deflected by electric and/or magnetic fields. The assembly contains an electron gun arranged to direct a beam upon a fluorescent screen. Scanning by the beam can produce light at all points.

CENTERING DEVICE, DIAPOSITIVE - See DIAPOSITIVE CENTERING DEVICE.

CENTER OF RADIATION - The selected point on a photograph from which radials are drawn or measured.

CENTER, PHOTOGRAPH - The center of a photograph as indicated by the images of the fiducial marks of a camera. In a perfectly adjusted camera the photograph center and the principal point are identical.

CENTRAL MERIDIAN - The meridian, usually passing near the center of the area, used as the Y or N axis in a plane-coordinate or grid system. To avoid negative coordinates in the system, this meridian is usually assigned a large X or E value.

CENTRAL PERSPECTIVE RAY - The ray from the external perspective center to the object point whose image is located at the principal point.

C FACTOR - An empirical value which expresses the contour plotting capability of a given stereoscopic system, generally defined as the ratio of flight height to the smallest contour interval accurately plottable. Not a constant but dependent on conditions present, it is used in determination of flying height or as a rough comparison of photogrammetric systems.

CHART - (USGS) A special-purpose map generally designed for navigation. The term “*chart*” is applied chiefly to maps made primarily for nautical and aeronautical navigation and to maps of the heavens, though the term is sometimes used to describe other special-purpose maps.

CHECKED ELEVATION - An elevation determined by two or more independent sets of measurements, or by a closed loop, in which the results agree within a specified limit. Results are printed in black on USGS maps.

CHECK PROFILE - A profile plotted by use of field survey measurements to check a profile plotted using measurements of position and elevation from a topographic map.

CHICAGO ROD - A two piece leveling rod with a telescopic joint.

CIRCUIT - A series of connected survey lines that form a closed loop; also, a line or series of lines connecting two fixed points.

CIRCUIT CLOSURE - The discrepancy between the algebraic sum of the differences in elevation between junction points in a leveling circuit and the theoretical value of zero.

CIRCULAR LEVEL - A spirit level with the inside surface of its upper part ground spherical to form a circular bubble, and with graduations consisting of concentric circles, for application where high precision is not required.

CLASSICAL POINTS - Six symmetrically selected image points located within the neat model at which Y parallax is removed during relative orientation of the photographs. Four of the points are near the model corners; the other two are near the X-X axis near the model boundary. See PASS POINTS.

CLOSED TRAVERSE - A traverse which starts and ends upon the same station or upon stations of known position.

CLOSING THE HORIZON - Measuring the last angle of a series of angles around a station.

CLOSURE - 1) The process of measurement in a closed figure for a check on horizontal or vertical precision. 2) (USGS) A misclosure. See JUNCTION CLOSURE, HORIZON CLOSURE and TRIANGLE CLOSURE.

COASTAL PLAIN - A plain which borders the sea coast, and extends from the sea to the nearest elevated land. It is sometimes formed through denudation by the sea, the beach being later raised by earth movement to form a plain, frequently known as a Raised Beach, or by deposition of solid matter at their mouths by rivers.

COASTLINE - The line that separates the land surface and the water surface of the sea or ocean. See BEACH and BEACH*.

COATED LENS - A lens coated to reduce light reflection from its surface and for selectively absorbing light of a particular wavelength (color) so as to prevent it from passing through the lens.

COINCIDENCE - 1) The alinement if diametrically opposed index marks to form a continuous line under the reading microscope of a theodolite. 2) The alinement of the images of opposite ends of a level bubble.

COLLIMATE - 1) To render parallel to a certain line or direction, to render parallel, as rays of light; to adjust the line of sight or lens axis of an optical instrument so that it is in its proper position relative to other parts of the instrument. 2) To adjust the fiducial marks of a photogrammetric camera so that they define the principal point. Also called adjustment for collimation.

COLLIMATION - The act of making a collimation adjustment.

COLLIMATION ADJUSTMENT - The process of bringing the line of collimation of a telescope into close agreement with the collimation axis. Also termed adjustment for collimation.

COLLIMATION AXIS - The line through the second nodal point of the objective (object glass) perpendicular to the horizontal axis of a transit or perpendicular to the vertical axis of a level.

COLLIMATION, ERROR OF - The angle between the line of collimation (line of sight) of a telescope and its collimation axis.

COLLIMATION, LINE OF - The line through the second nodal point of the objective (object glass) of a telescope and the center of the reticle.

COLLIMATION PLANE - The plane described by the collimation axis of a telescope of a transit when rotated around its horizontal axis.

COLLIMATOR - A fixed telescope with crosshairs in its focus, used to adjust a second telescope by looking through it in a reverse direction with the latter so that images of the crosshairs are formed in the focus of the second telescope, as if they originated in a distant point.

COLOR COMPOSITE IMAGE - In landsat imagery, a color negative, transparency, or print produced from bulk or precision black-and-white triplet sets.

COLOR ENHANCEMENT - Utilization of contrasting colors (rather than differences in grey values) to indicate subtle changes in film density. Can be applied in single or multi-emulsion situations.

COLOR PROOF - A multicolor print made by whirling or rubbing color proof sensitizer on a proof sheet and making consecutive exposures through the scribed features. Each color requires separate sensitization which is applied over the previous color print to form the composite multicolor proof.

COLOR SEPARATION - The preparation of separate drawings for each type of map data to be reproduced in a separate color.

COLOR SEPARATION DRAWING - Separate manuscripts prepared for each color of the completed map.

COLOR-SEPARATION GUIDE - A print of a manuscript that provides copy for final drafting, scribing, or stickup of selected data.

COMBINATION GRAVER - A swivel graver which may be converted to a rigid graver for scribing.

COMPARATOR - 1) An instrument or apparatus for measuring a dimension in terms of a standard. 2) An instrument for comparing standards of length; for subdividing such standards; or for determining a standard length of a measuring device. 3) An optical instrument, usually precise, for measuring rectangular or polar coordinates of points on any plane surface, such as a photographic plate.

COMPASS SURVEY - A transverse survey which relies on the magnetic needle for orienting the sequence as a whole or for determining the bearings of lines individually.

COMPENSATING ERROR - An error that tends to offset a companion error and thus obscure or reduce the effect of each.

COMPENSATION PLATE - See CORRECTION PLATE.

COMPILATION - 1) The production of a new or improved map (or portion of a map) from existing maps, aerial photographs, surveys, new data, and other sources. 2) The production of a map (or portion of a map) from aerial photographs and geodetic control data, by means of photogrammetric instruments.

COMPILED MAP - A map incorporating information collected from various sources, not developed by surveys made for the map in question. Most small-scale maps of large areas are compiled maps.

COMPLETION - Obtaining field information needed to edit and publish a map from a compiled manuscript. See FIELD COMPLETION and COMPLETION SURVEY*.

COMPOSITE - A print containing the reproducible information from two or more color separation drawings surprinted in register.

COMPUTER MAPPING - See DIGITAL MAPPING.

CONCLUDED ANGLE - An interior angle between adjacent sides of a polygon which is obtained by subtracting the sum of all the other interior angles of the figure from the theoretical value of the sum of all interior angles.

CONFLUENCE - A junction or flowing together of streams; the place where streams meet.

CONFORMAL - Having the map scale at any one point the same in both directions. See CONFORMALITY.

CONFORMALITY - The unique property of conformal map projections, in which all small or elementary figures on the surface of a sphere retain their original shapes on the map. See ANGULAR DISTORTION.

CONFORMAL MAP PROJECTION - See CONFORMALITY.

CONGRUENCING - Process by which two images or two digital images of a multi-image set are transformed so that the size and shape of any object on one photograph is the same as the size and shape of that object on the other photograph.

CONJUGATE IMAGE POINTS - Unique, selected objects appearing in each of two or more photographs. See the preferred term CORRESPONDING IMAGE POINTS.

CONSTANT ERROR - A systemic error which is the same in both magnitude and sign throughout a given series of observations, such as an index error of an instrument.

CONSTRUCTION SURVEY - The survey measurements made for design information, stakeout for construction or for surveys during progress of construction as well as following completion of the work for quantity determination.

CONTACT PRINT - A photographic print produced by the exposure of a sensitized emulsion in contact with the emulsion of a negative or positive transparency.

CONTACT PRINTER (USGS) - 1) Any machine which reproduces a photographic image using emulsion contact. 2) A diapositive printer in which the sensitized surface of the diapositive plate is placed in direct contact with that of the aerial negative to produce an exact positive copy of the negative.

CONTINENT - Large land mass rising more or less abruptly above the deep ocean floor; includes marginal areas that are shallowly submerged.

CONTINENTAL APRON - The gentle incline at the base of the continental slope leading to the deep oceanic basins.

CONTINENTAL MARGIN - The zone separating the emergent continents from the deep sea bottom; generally consists of continental shelf, continental slope and continental rise.

CONTINENTAL SHELF - The submerged portion of a continent which slopes gently seaward from the low-water line to a point where a substantial break in grade occurs, at which point the bottom slopes seaward at a considerable increase in slope until the great ocean depths are reached. The point of break defines the “*edge*” of the shelf, and the steeper sloping bottom the “*continental slope*.” Conventionally, the edge is taken at 100 fathoms (or 200 meters) but instances are known where the increase in slope occurs at more than 200 or less than 65 fathoms. See OUTER CONTINENTAL SHELF.

CONTINENTAL SLOPE - Continuously sloping portion of the continental margin with gradient of more than 1 to 40, beginning at the outer edge of the continental shelf and bounded on the outside by a rather abrupt decrease in slope where the continental rise begins at depths ranging from about 4,500 to 10,000 feet; formerly considered to extend to abyssal plains.

CONTINENTAL TALUS - The steep slope from the lower edge of the continental shelf into the ocean depths. It is characterized by a marked change in gradient and usually begins at a depth of approximately 100 fathoms.

CONTINUOUS-STRIP PHOTOGRAPHY - Photography of a strip of terrain in which the image remains unbroken throughout its length along the line of flight. See SONNE CAMERA.

CONTOUR - An imaginary line on the ground all points of which are at the same elevation above or below a specified datum surface. See APPROXIMATE CONTOUR, CARRYING CONTOUR, DEPRESSION CONTOUR, INDEX CONTOUR, INTERMEDIATE CONTOUR, SUPPLEMENTAL CONTOUR and UNDERWATER CONTOUR.

CONTOUR INTERVAL - The difference in elevation between adjacent contours.

CONTOUR MAP - See TOPOGRAPHIC MAP.

CONTRAST - Difference between tones on a photograph; the variation in brightness of different parts of a negative or positive.

CONTRAST IMPROVEMENT - Image alternation which increases the grey-tone intensity differences.

CONTROL INDEX MAP (USGS) - A map of an area showing by suitable symbols the location of all control lines or stations of a designated category, and indicating the file location of the related control data. See GEODETIC CONTROL DIAGRAMS.

CONTROLLED MOSAIC - A mosaic oriented and scaled to horizontal control; usually assembled from rectified photographs.

CONTROL BASE (USGS) - A surface upon which the map projection and ground control are plotted and upon which pass points resulting from aerotriangulation have been plotted or marked. See BASE SHEET.

CONTROL, PHOTO - Any station in a horizontal and vertical control system that is identified on a photograph and used for correlating the data shown on that photograph; also termed photocontrol point, picture control point, and ground control point.

CONTROL POINTS - Any station (in a horizontal and/or vertical-control system) that is identified on a photograph and used to aid in fixing the attitude and/or position of a photograph or group of photographs.

CONTROL STRIP - 1) A strip of aerial photographs taken to aid planning and accomplishing later aerial photography, or to serve as control in assembling other strips. 2) A strip of film used for control of exposure, development, or both.

CONTROL SURVEY - A survey which provides horizontal or vertical position data for subordinate surveys or mapping.

CONTROL SURVEY CLASSIFICATION - A series of designations to classify control surveys according to their precision and accuracy. The highest prescribed order of control surveys is designated first order; the next lower prescribed classification, second order; the lowest, third order. Specifications issued by the Bureau of the Budget in 1958 establish three main orders of geodetic control, with additional sub-divisions of classes in some of them. Surveys which fail to meet one of the three preceding specifications are called fourth order although they meet no prescribed standards.

CONVERGENCE OF EVIDENCE - Bringing together several kinds of evidence so that a conclusion may be drawn from all available data.

CONVERGENCE OF MERIDIANS - The drawing together of the geographic meridians in passing from the Equator to the Pole.

CONVERGENT PHOTOGRAPHY - Aerial photography with the camera (or cameras) intentionally tilted so that the central perspective ray of one exposure is inclined to that of an adjacent station.

COORDINATES - A set of numbers used in specifying the location of a point.

COORDINATE SYSTEM - A mathematically defined method for specifying the locations of points. Distances or angles from suitable references located the points within the system. See GEODETIC COORDINATES, GEOGRAPHIC COORDINATES, PLANE COORDINATES, SPHERICAL COORDINATES, STATE COORDINATE SYSTEMS, STATE PLANE COORDINATES and UNIVERSAL TRANSVERSAL MERCATOR.

COORDINATE TRANSFORMATION - Mathematical conversion of coordinate values from one system to another.

COORDINATOGRAPH - An instrument by which the X and Y coordinates of points and/or lines are plotted on a plane, such as in compiling maps or in plotting control points.

COPLANER - Lying in the same plane.

COPYING CAMERA - A precision camera used in the laboratory for reproduction purposes. Also called process camera.

CORNER, FOUND - A term adopted by the U. S. Geologic Survey to designate an existent corner of the public-land surveys which has been recovered by field investigation. See CORNER*.

CORRECTION - A quantity which is applied to an observation or function thereof to diminish or eliminate the effects of errors and obtain an improved value of the observation or function. It is also applied to reduce an observation to some arbitrary standard.

CORRECTION PLATE - A glass plate having a surface ground to a predetermined shape for insertion into an optical system to compensate for known systemic errors in the photogrammetric system.

CORRESPONDENCE - The condition that exists when corresponding images on a pair of photographs lie in the same epipolar plane; the absence of y parallax. See Y PARALLAX.

CORRESPONDING IMAGE POINTS - Unique objects appearing in each of two or more photographs selected to correlate the photograph.

COULEE - 1) A short, blocky, steep-sided lava flow, generally of glassy rhyolite or obsidian, issuing from the flank of a volcanic dome or from the summit crater of a volcano. 2) The term coulee is generally applied throughout the northern tier of states to any steep-sided gulch or water channel and at times even to a stream valley of considerable length.

COURSE - 1) The bearing or, azimuth and length of a line, considered together. 2) The azimuth or bearing of a line along which a ship or aircraft is to travel or does travel, without change of direction; the line drawn on a chart or map as the intended track. The direction of a course is always measured in degrees from the true meridian, and the true course is always meant unless it is otherwise qualified; e.g., as a magnetic or compass course. 3) A route on the earth along which a river flows; the river itself.

COVE - A small bay or open harbor.

COVERAGE - 1) Inclusion of an area within overlapping aerial photos. 2) A measure of the amount of area covered in an aerial photograph, usually expressed as square miles per frame.

CRAB - A photographic condition caused by failure to orient the camera to the flight line resulting in photo edges not parallel to the air base.

CREEK - 1) A stream of less volume than a river. 2) A small stream of intermittent flow.

CRESCENT BEACHES - Crescent-shaped beaches concave toward the sea which form at the heads of bays and at the mouths of streams entering these bays along hilly and mountainous coasts.

CREST - The summit land of any eminence; the highest natural projection which crowns a hill or mountain, from which the surface dips downward in opposite directions.

CRITICAL POINT - A peak or high ground with abrupt local relief requiring investigation in planning aerial photography to avoid "*hidden ground*."

CRITICAL SURFACE - A valley terrain of cylindrical form with the air base lying on or near the surface of the cylinder as extended into the air. Orientation becomes indeterminate.

CROSS SECTIONING, DIGITAL - The determination of a vertical section of terrain in which the measurements are stored as numerical values. See DIGITIZING.

CUESTA - A ridge, or belt of hilly land, formed on gently dipping rock strata (e.g. on a coastal plain) from the more durable layers, which resist denudation better than the weaker layers, and are thus left behind as uplands; it has a gentle dip slope on one side, and a relatively steep scarp slope on the other.

CULTURE - Those features of the terrain that have been constructed by man, such as roads, trails, buildings and boundary lines.

CULVERT - A structure carrying traffic over a watercourse having a 10 feet or less clear span. Usually a pipe section.

CURVES - Curved rulers, termed irregular curves, or French curves, used for drawing curved lines. The patterns for these curves are laid out in parts of ellipses and spirals or other mathematical curves in various combinations. Curves for drawing circular curves are highway curves.

CUT - 1) Depth to which material is to be excavated (*cut*) to bring the surface to a predetermined grade. Therefore, the cut is the difference in elevation of a surface point and a point on the proposed subgrade vertically below it. 2) The name applied to the excavated area itself. 3) A graphic ray from a known plane table position to an unknown position. See CUT*.

CUT TAPE - A survey tape on which the minor graduation are placed only between zero and one unit. See ADD TAPE.

D

DEP. - Departure (of a traverse)

DI-10 - A brand name of electronic distance measurement equipment.

DATUM - A position or element in relation to which others are determined; a reference system. In surveying, two principal types of datums are used - horizontal and vertical. See SEA LEVEL DATUM, NORTH AMERICAN DATUM OF 1927, 1927 NAD, HORIZONTAL GEODETIC DATUM and VERTICAL GEODETIC DATUM.

DATUM PLANE - A surface used as a reference from which to reckon heights or depths. The datum in most general use is based upon mean sea level and this is used as the reference for the first-order level net extending over the whole country.

DATUM SHIFT - A graphical correction required where source map data is on a different datum than the map under revision.

DEFLECTION ANGLE (USGS) - The angle, measured in the vertical plane containing the flight direction, between the datum of a model in a stereotriangulated strip and the datum of the preceding model. See DEFLECTION ANGLE*.

DELINEATION - The visual selection and distinguishing of mapworthy features on the surface of various possible source materials by outlining the features on the source material, or on a map manuscript (as when operating a stereoscopic plotting instrument); also, a preliminary step in compilation. See COMPILATION and PHOTO DELINEATION.

DELTA - The fan-shaped alluvial tract formed at the mouth of a river, when it deposits more solid material there than can be removed by tidal or other currents.

DENSITOMETER - Device used to measure the average grey-tone density of images on a piece of film. The measurement may be a meter reading or an electronic signal. When the observed area is smaller than a few hundred microns, the instrument is called a microdensitometer.

DENSITY - 1) The comparative amount of silver (or dye) in a given area of a photograph resulting from exposure to light and development. 2) Descriptive of the number of survey control points in an area.

DEPARTURE - The east-west component of a traverse course.

DEPRESSION ANGLE - The vertical angle measured at the perspective center between the true horizon and the photograph perpendicular. The complement of an angle of tilt.

DEPRESSION CONTOUR - A contour forming a closed loop around lower ground.

DEPTH CURVE - A line connecting points of equal depth, referenced to a water surface. Intervals between depth curves may be variable.